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Medication Adherence Assessment: A New Weapon in the War Against Diabetes?

With the advancement of technology, pharmaceutical regimens, monitoring devices and education, complications from diabetes should decline. However, according to the American Diabetes Association (ADA) in 2002, "About 82,000 non-traumatic lower limb amputations were performed in people with diabetes; a total of 153,730 people with ESRD due to diabetes were living on chronic dialysis or with a kidney transplant, and diabetic retinopathy causes 12,000 to 24,000 new cases of blindness in adults 20-74 years of age." These numbers would support that although methods for diabetes care and control have improved, complications continue to flourish. It is well known that patients who adhere to healthy lifestyles and treatment regimens have fewer complications.

A recent study of medication non-adherence among patients with diabetes documented adverse outcomes in patients with diabetes. (1) Investigators at the Kaiser HMO in Colorado examined the electronic pharmacy data for all the patients in their diabetes registry from September 2002 through December 2003. They calculated a "proportion of days covered (PDC)" for oral agents, antihypertensive therapies, and statins. They could not estimate the coverage for insulin

because of the dosage variability, but they included the insulin treated patients who were on antihypertensive medications and statins. Patients were categorized as adherent if the PDC was 80% or more. To look at outcomes, they used hospitalization data and mortality data from their records and compared baseline and the most recent A1c, LDL-cholesterol, and the mean of the last 2 blood pressure readings.

Of their 11532 patients with diabetes, 21% were categorized as non-adherent overall. Interestingly, for antihypertensive meds it was 19%, statins 25%, and oral agents 20%. At baseline there were no differences in the proportion of adherent or non-adherent patients with higher A1c, blood pressure, and LDL levels.

During follow-up 4% of adherent patients with diabetes died compared to 5.9% of those who were not adherent. And 19.2% of the adherent group were hospitalized compared to 23% of those who were non-adherent. ($p < .001$). They adjusted the mortality and the hospitalization rates for age, sex and various diagnoses, and the findings remained significant.

The investigators described other associations between medication adherence and clinical outcomes. For every 25% increase in adherence to antihypertensive medication, the systolic pressure decreased by 1mm Hg and diastolic 1.2 mmHg. For A1c, each 25% increment in adherence was associated with a 0.05% decrease in A1c. For LDL, every 25% increment in statin adherence was associated with a 3.8 mg/dl decrease in LDL. Increases in medication adherence also influenced mortality and hospitalization rates favorably. Medication adherence is only one of a number of self-care behaviors which may influence outcomes. But medication non-adherence is widespread among patients with diabetes and opportunities to improve adherence are an attractive way to improve diabetes care and outcomes. As so aptly put by Dr. C. Everett Koop, "Drugs" don't work in those that don't take them. Many factors have been cited as influencing medication non-adherence. Among these are complexity of

treatment regimen, polytherapy, depression, lack of education, and ever increasing pharmaceutical costs. (2) Many patients do not experience symptoms with hypertension or dyslipidemia, or may not recognize symptoms of hyperglycemia. Being able to associate symptoms such as moodiness, lack of energy, recurrent infections and blurred vision with poor control instead of relating it to age or environmental factors may entice a patient to adhere to treatment recommendations to improve their quality of life. (3) Communication regarding these issues may contribute to patient adherence by helping them realize the potential for improvement in quality of life. Assessing the reasons for non-adherence to medication plays an important role in overcoming the problem. Patient questionnaires and patient self reports have been reported to be the simplest, least expensive, and most useful method in the clinical setting for measuring adherence to medication. (4)

With this information in mind, the Montana Diabetes Project staff is in the process of developing a medication adherence QI pilot project utilizing a single page questionnaire known as the ASK-20 (Adherence starts with knowledge) medication adherence assessment tool.(enc.)

1. Ho M. Rumsfeld; JS Masoudi FA., et al. Effects of medication nonadherence on hospitalization and mortality among patients with diabetes mellitus. Arch Intern Med. 2006;166:1836-1841.
2. Rhee, M.K., Slocum, W., Ziemer, D.C., Culler, S.D., et. al. Patient adherence improves glycemic control. Diabetes Educator 2005; 31(2):240-250.
3. Rubin, R.R., Adherence to pharmacologic therapy in patients with type 2 diabetes mellitus. Am J Med. 2005;118(5A):27S-34S.
4. Osterberg L, Blaschke T, Adherence to Medication. N Engl J Med 2005;353:487-497

FIGURE 1: PHYSICIAN OFFICES PARTICIPATING IN THE DIABETES QUALITY CARE MONITORING SYSTEM (DQCMS) PROJECT, July 2007 (N = 37)

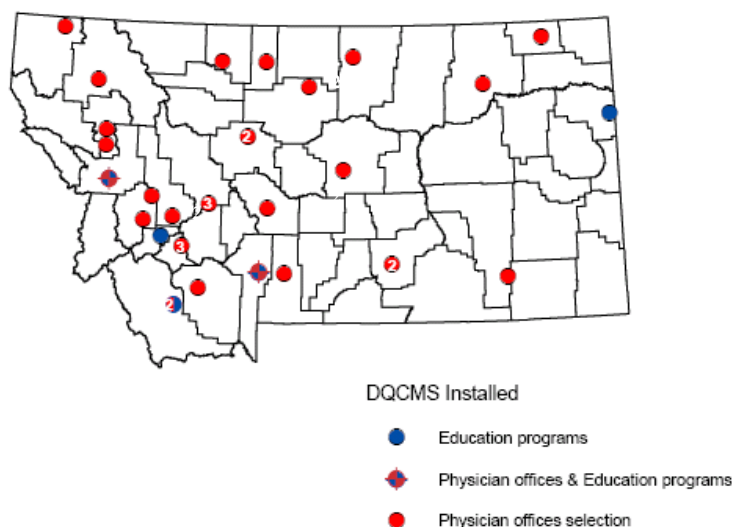


FIGURE 2: DIABETES CARE INDICATORS FROM MONTANA PHYSICIAN OFFICES PARTICIPATING IN THE DCMS/ DQCMS PROJECT, BASELINE (N = 22 CLINICS; 3,629 PATIENTS) AND JULY 2007 (N = 29 CLINICS; 6,358 PATIENTS)

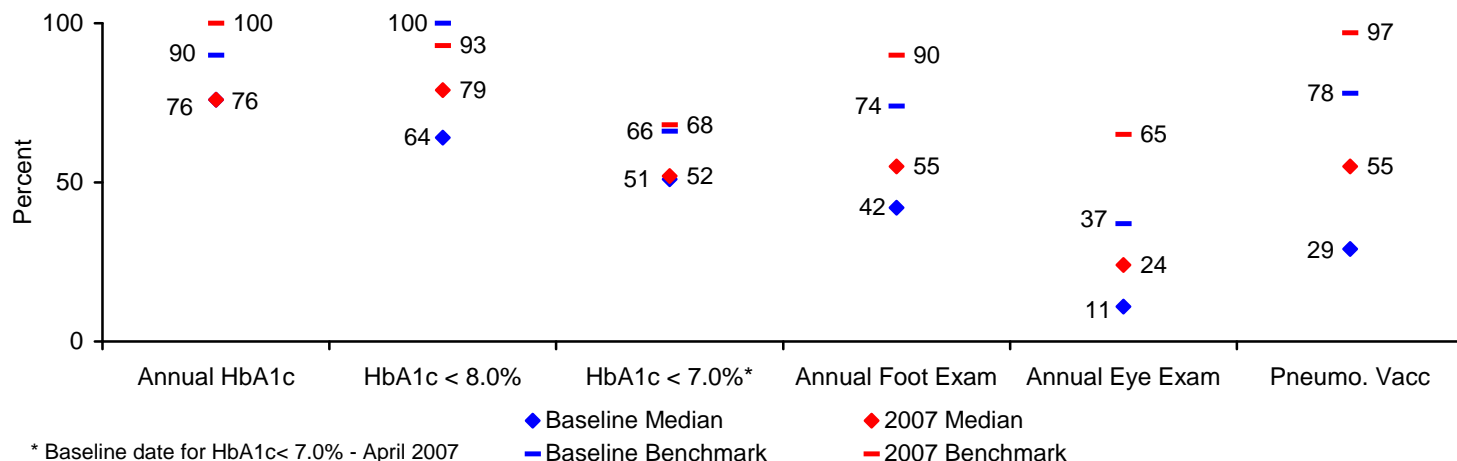
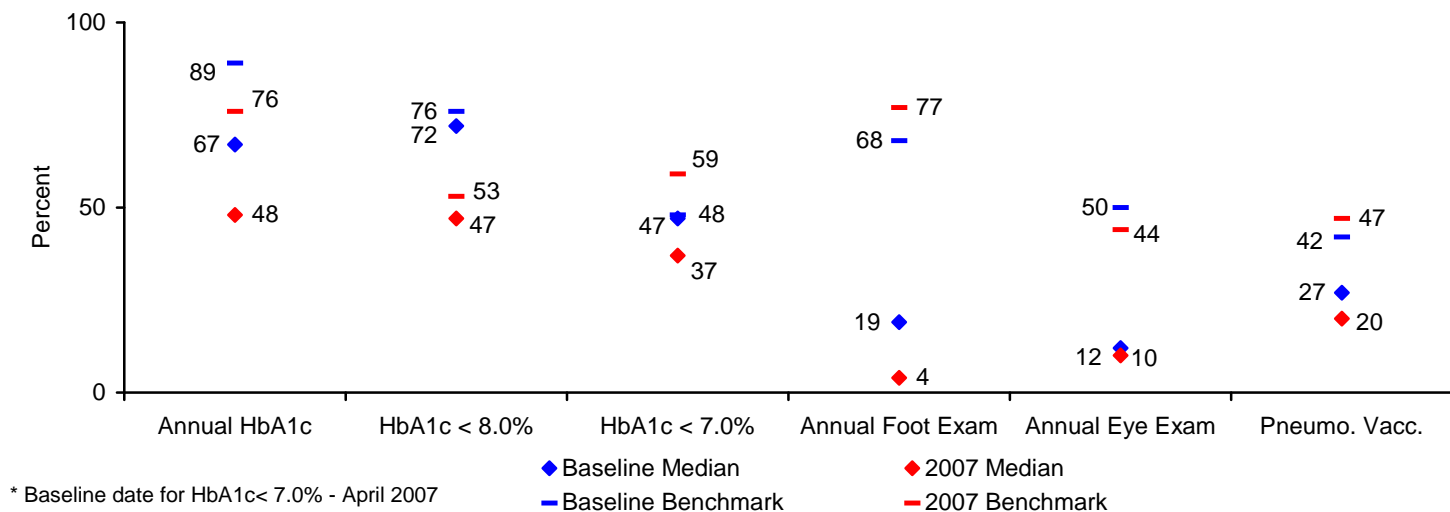


FIGURE 3: DIABETES CARE INDICATORS FROM MONTANA DIABETES EDUCATION PROGRAMS PARTICIPATING IN THE DQCMS PROJECT, BASELINE (N = 4 SITES; 912 PATIENTS) AND JULY 2007 (N = 6 SITES; 1,471 PATIENTS)



What Do You Think of the Quality Improvement Report

Early this spring we sent a survey to our DQCMS sites that receive the Quality Improvement Report (QIR). The purpose was to determine if the QIR is helpful and of value to providers in managing their diabetes care programs. This information will assist us in making changes in the format and/or content where necessary.

Thank you to all who responded. We appreciate the time taken to complete the survey. Below is a summary of the findings.

23 of 48 sites responded

Questions 1-3, internal for distribution information.

Questions 5 & 6

5. What do you find most helpful?

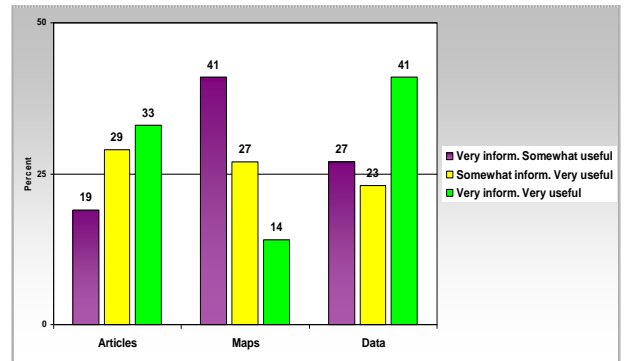
- Key factors for intervention
- Care indicators
- Success stories
- Summary of current literature
- The how to
- ADA and state levels
- Changes in recommendations
- Updates are valuable
- Information to pass on to patients
- How we compare and what areas need to be worked on
- To use the data for reports
- Visually able to make comparisons to benchmarks
- Articles

6. Information you would find more useful:

- Difficult to apply to outpatient facility, more geared to provider
- Would be nice to have follow-up
- Tracking of gestational diabetes
- Not specific enough to practice to make changes
- New information re: resources, education and program opportunities

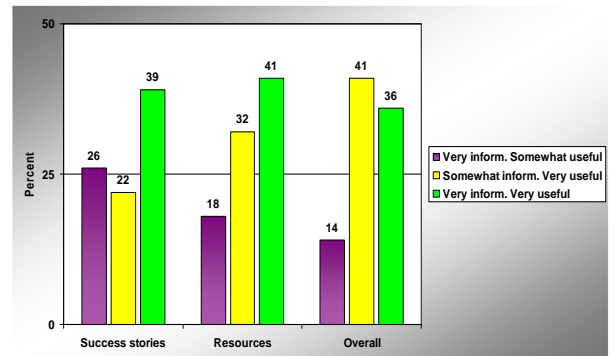
Questions 4, 7, 8

Percentage of respondents that find articles, maps and data informative and useful

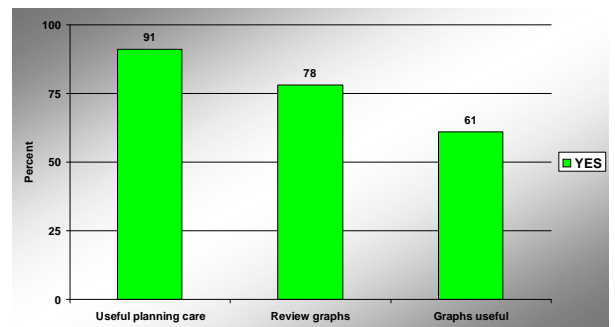


Overview:

Percentage of Respondents that find success stories, resources and the QIR in general informative and useful



Percentage of respondents who find the QIR useful in care planning, and for comparison studies





Montana Quit Line Celebrates Third Anniversary

Free service has helped more than 5,000 Montanans give up deadly habit

The Montana Tobacco Use Prevention Program (MTUPP) is celebrating the success of its Tobacco Quit Line this month, as May 2007 marks the third anniversary for a service that has solicited more than 17,500 callers and boasts one of the highest quit rates in the nation. Thirty percent of callers report successfully quitting – that's more than 5,000 people who are reducing their chances of becoming ill or dying from tobacco-related causes. For information on this Quit Line, contact Stacy Campbell, 406-444-3138.



Welcome to the new DQCMS/QI Partner:

- Kalispell Regional Hospital-Diabetes Education Center

Save the Dates!

WHAT: Diabetes Professional Conference

WHEN: October 11-12, 2007

**WHERE: Best Western Great Northern Hotel
Helena, MT**

(Call Susan Day at 406-444-6677
for more information)

WHAT: Wyoming Chronic Disease Conference

WHEN: May 7-8, 2008

**WHERE: Little America Hotel
Cheyenne, WY**

(Call Wanda Webb 307-587-5689
for more information)

~Montana Diabetes Project (MDP) Staff~

Program Manager

Helen Amundson, RN, BSN, CDE
(406)444-0593 hamundson@mt.gov

QDEI Coordinator

Marcene Butcher, RD, CDE
(406)578-2075 marcibutcher@msn.com

Epidemiologist

Carrie Oser, MPH
(406)444-4002, coser@mt.gov

Office Manager/Accountant

Susan Day (406)444-6677
(406)444-6677 sday@mt.gov

Quality Improvement Coordinator

Linda Stewart, BSN, RN (Billings)
(406)245-6003 lindastewart@rbbmt.org

Quality Improvement Coordinator

Chris Jacoby, BSN, RN (Helena)
(406)-444-7324 cjacoby@mt.gov

Medical Consultant

Dorothy Gohdes, MD
505-296-5820